



1/27

SEQUENCE LISTING

<110> Hedley, Mary Lynne
Urban, Robert G.
Chicz, Roman M.

<120> NUCLEIC ACIDS ENCODING POLYPEPTIDES

<130> 08191-013001

<140> US 09/664,225

<141> 2000-09-18

<150> US 60/169,846

<151> 1999-12-09

<150> US 60/154,665

<151> 1999-09-16

<160> 163

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 9

<212> PRT

<213> Homo sapiens

<400> 1

Ala Ala Arg Ala Val Phe Leu Ala Leu
1 5

<210> 2

<211> 8

<212> PRT

<213> Homo sapiens

<400> 2

Tyr Arg Pro Arg Pro Arg Arg Tyr
1 5

<210> 3

<211> 9

<212> PRT

<213> Homo sapiens

<400> 3

Glu Ala Asp Pro Thr Gly His Ser Tyr
1 5

<210> 4

<211> 9

<212> PRT

<213> Homo sapiens

<400> 4

Ser Ala Tyr Gly Glu Pro Arg Lys Leu
1 5

<210> 5

<211> 9

<212> PRT
 <213> Homo sapiens

<400> 5
 Glu Val Asp Pro Ile Gly His Leu Tyr
 1 5

<210> 6
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 6
 Phe Leu Trp Gly Pro Arg Ala Leu Val
 1 5

<210> 7
 <211> 7
 <212> PRT
 <213> Homo sapiens

<400> 7
 Gly Ile Gly Ile Leu Thr Val
 1 5

<210> 8
 <211> 8
 <212> PRT
 <213> Homo sapiens

<400> 8
 Ile Leu Thr Val Ile Leu Gly Val
 1 5

<210> 9
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 9
 Ser Thr Ala Pro Pro Ala His Gly Val
 1 5

<210> 10
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 10
 Glu Glu Lys Leu Ile Val Val Leu Phe
 1 5

<210> 11
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 11
 Met Leu Leu Ala Val Leu Tyr Cys Leu
 1 5

<210> 12
 <211> 9
 <212> PRT
 <213> Homo sapiens

 <400> 12
 Ser Glu Ile Trp Arg Asp Ile Asp Phe
 1 5

 <210> 13
 <211> 9
 <212> PRT
 <213> Homo sapiens

 <400> 13
 Ala Phe Leu Pro Trp His Arg Leu Phe
 1 5

 <210> 14
 <211> 9
 <212> PRT
 <213> Homo sapiens

 <400> 14
 Tyr Met Asn Gly Thr Met Ser Gln Val
 1 5

 <210> 15
 <211> 9
 <212> PRT
 <213> Homo sapiens

 <400> 15
 Lys Thr Trp Gly Gln Tyr Trp Gln Val
 1 5

 <210> 16
 <211> 9
 <212> PRT
 <213> Homo sapiens

 <400> 16
 Ile Thr Asp Gln Val Pro Phe Ser Val
 1 5

 <210> 17
 <211> 9
 <212> PRT
 <213> Homo sapiens

 <400> 17
 Tyr Leu Glu Pro Gly Pro Thr Val Ala
 1 5

 <210> 18
 <211> 10
 <212> PRT
 <213> Homo sapiens

 <400> 18
 Leu Leu Asp Gly Thr Ala Thr Leu Arg Leu
 1 5 10

<210> 19
 <211> 10
 <212> PRT
 <213> Homo sapiens

<400> 19
 Glu Leu Asn Glu Ala Leu Glu Leu Glu Lys
 1 5 10

<210> 20
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 20
 Ser Thr Pro Pro Pro Gly Thr Arg Val
 1 5

<210> 21
 <211> 11
 <212> PRT
 <213> Homo sapiens

<400> 21
 Leu Leu Pro Glu Asn Asn Val Leu Ser Pro Leu
 1 5 10

<210> 22
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 22
 Leu Leu Gly Arg Asn Ser Phe Glu Val
 1 5

<210> 23
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 23
 Arg Met Pro Glu Ala Ala Pro Pro Val
 1 5

<210> 24
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 24
 Lys Ile Phe Gly Ser Leu Ala Phe Leu
 1 5

<210> 25
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 25
 Ile Ile Ser Ala Val Val Gly Ile Leu
 1 5

<210> 26
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 26
 Cys Leu Thr Ser Thr Val Gln Leu Val
 1 5

<210> 27
 <211> 8
 <212> PRT
 <213> Homo sapiens

<400> 27
 Tyr Leu Glu Asp Val Arg Leu Val
 1 5

<210> 28
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 28
 Val Leu Val Lys Ser Pro His Asn Val
 1 5

<210> 29
 <211> 12
 <212> PRT
 <213> Homo sapiens

<400> 29
 Arg Phe Arg Glu Leu Val Ser Glu Phe Ser Arg Met
 1 5 10

<210> 30
 <211> 10
 <212> PRT
 <213> Homo sapiens

<400> 30
 Leu Leu Arg Leu Ser Glu Pro Ala Glu Leu
 1 5 10

<210> 31
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 31
 Asp Leu Pro Thr Gln Glu Pro Ala Leu
 1 5

<210> 32
 <211> 6
 <212> PRT
 <213> Homo sapiens

<400> 32
 Lys Leu Gln Cys Val Asp
 1 5

<210> 33
 <211> 10
 <212> PRT
 <213> Homo sapiens

<400> 33
 Val Leu Val Ala Ser Arg Gly Arg Ala Val
 1 5 10

<210> 34
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 34
 Val Leu Val His Pro Gln Trp Val Leu
 1 5

<210> 35
 <211> 10
 <212> PRT
 <213> Homo sapiens

<400> 35
 Asp Met Ser Leu Leu Lys Asn Arg Phe Leu
 1 5 10

<210> 36
 <211> 9
 <212> PRT
 <213> Hepatitis B virus

<400> 36
 Gln Trp Asn Ser Thr Ala Phe His Gln
 1 5

<210> 37
 <211> 7
 <212> PRT
 <213> Hepatitis B virus

<400> 37
 Val Leu Gln Ala Gly Phe Phe
 1 5

<210> 38
 <211> 8
 <212> PRT
 <213> Hepatitis B virus

<400> 38
 Leu Leu Leu Cys Leu Ile Phe Leu
 1 5

<210> 39
 <211> 8
 <212> PRT
 <213> Hepatitis B virus

<400> 39
 Leu Leu Asp Tyr Gln Gly Met Leu
 1 5

<210> 40
 <211> 6
 <212> PRT
 <213> Hepatitis B virus

<400> 40
 Leu Leu Val Pro Phe Val
 1 5

<210> 41
 <211> 10
 <212> PRT
 <213> Hepatitis B virus

<400> 41
 Ser Ile Leu Ser Pro Phe Met Pro Leu Leu
 1 5 10

<210> 42
 <211> 9
 <212> PRT
 <213> Hepatitis B virus

<400> 42
 Pro Leu Leu Pro Ile Phe Phe Cys Leu
 1 5

<210> 43
 <211> 10
 <212> PRT
 <213> Hepatitis B virus

<400> 43
 Ile Leu Ser Thr Leu Pro Glu Thr Thr Val
 1 5 10

<210> 44
 <211> 10
 <212> PRT
 <213> Hepatitis B virus

<400> 44
 Phe Leu Pro Ser Asp Phe Phe Pro Ser Val
 1 5 10

<210> 45
 <211> 9
 <212> PRT
 <213> Hepatitis B virus

<400> 45
 Lys Leu His Leu Tyr Ser His Pro Ile
 1 5

<210> 46
 <211> 9
 <212> PRT
 <213> Hepatitis B virus

<400> 46
 Ala Leu Met Pro Leu Tyr Ala Cys Ile
 1 5

<210> 47
 <211> 9
 <212> PRT
 <213> Hepatitis B virus

<400> 47
 His Leu Tyr Ser His Pro Ile Ile Leu
 1 5

<210> 48
 <211> 9
 <212> PRT
 <213> Hepatitis B virus

<400> 48
 Phe Leu Leu Ser Leu Gly Ile His Leu
 1 5

<210> 49
 <211> 9
 <212> PRT
 <213> Hepatitis B virus

<400> 49
 His Leu Leu Val Gly Ser Ser Gly Leu
 1 5

<210> 50
 <211> 9
 <212> PRT
 <213> Hepatitis B virus

<400> 50
 Gly Leu Ser Arg Tyr Val Ala Arg Leu
 1 5

<210> 51
 <211> 9
 <212> PRT
 <213> Hepatitis B virus

<400> 51
 Leu Leu Ala Gln Phe Thr Ser Ala Ile
 1 5

<210> 52
 <211> 9
 <212> PRT
 <213> Hepatitis B virus

<400> 52
 Tyr Met Asp Asp Val Val Leu Gly Ala
 1 5

<210> 53
 <211> 9
 <212> PRT
 <213> Hepatitis B virus

<400> 53
 Gly Leu Tyr Ser Ser Thr Val Pro Val
 1 5

<210> 54
 <211> 5
 <212> PRT
 <213> Hepatitis B virus

<400> 54
 Asn Leu Ser Trp Leu
 1 5

<210> 55
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 55
 Lys Leu Pro Gln Leu Cys Thr Glu Leu
 1 5

<210> 56
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 56
 Leu Gln Thr Thr Ile His Asp Ile Ile
 1 5

<210> 57
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 57
 Phe Ala Phe Arg Asp Leu Cys Ile Val
 1 5

<210> 58
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 58
 Tyr Met Leu Asp Leu Gln Pro Glu Thr
 1 5

<210> 59
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 59
 Thr Leu His Glu Tyr Met Leu Asp Leu
 1 5

<210> 60
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 60
 Leu Leu Met Gly Thr Leu Gly Ile Val
 1 5

10/27

<210> 61
<211> 8
<212> PRT
<213> Human Papilloma virus

<400> 61
Thr Leu Gly Ile Val Cys Pro Ile
1 5

<210> 62
<211> 12
<212> PRT
<213> Human Papilloma virus

<400> 62
Leu Leu Met Gly Thr Leu Gly Ile Val Cys Pro Ile
1 5 10

<210> 63
<211> 25
<212> PRT
<213> Homo sapiens

<400> 63
Met Ala Ile Ser Gly Val Pro Val Leu Gly Phe Phe Ile Ile Ala Val
1 5 10 15
Leu Met Ser Ala Gln Glu Ser Trp Ala
20 25

<210> 64
<211> 20
<212> PRT
<213> Human Papilloma virus

<400> 64
Ala Met Phe Gln Asp Pro Gln Glu Arg Pro Arg Lys Leu Pro Gln Leu
1 5 10 15
Cys Thr Glu Leu
20

<210> 65
<211> 24
<212> PRT
<213> Human Papilloma virus

<400> 65
Leu Leu Arg Arg Glu Val Tyr Asp Phe Ala Phe Arg Asp Leu Cys Ile
1 5 10 15
Val Tyr Arg Asp Gly Asn Pro Tyr
20

<210> 66
<211> 23
<212> PRT
<213> Human Papilloma virus

<400> 66
Lys Ile Ser Glu Tyr Arg His Tyr Cys Tyr Ser Leu Tyr Gly Thr Thr
1 5 10 15
Leu Glu Gln Gln Tyr Asn Lys
20

<210> 67
 <211> 19
 <212> PRT
 <213> Human Papilloma virus

<400> 67
 Thr Leu His Glu Tyr Met Leu Asp Leu Gln Pro Glu Thr Thr Asp Leu
 1 5 10 15
 Tyr Ser Tyr

<210> 68
 <211> 14
 <212> PRT
 <213> Human Papilloma virus

<400> 68
 Gln Ala Glu Pro Asp Arg Ala His Tyr Asn Ile Val Thr Phe
 1 5 10

<210> 69
 <211> 17
 <212> PRT
 <213> Human Papilloma virus

<400> 69
 Leu Leu Met Gly Thr Leu Gly Ile Val Cys Pro Ile Cys Ser Gln Lys
 1 5 10 15
 Pro

<210> 70
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 70
 Ile Ser Glu Tyr Arg His Tyr Cys Tyr
 1 5

<210> 71
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 71
 Phe Gln Asp Pro Gln Glu Arg Pro Arg
 1 5

<210> 72
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 72
 Arg Arg Glu Val Tyr Asp Phe Ala Phe
 1 5

<210> 73
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 73
 Thr Thr Leu Glu Gln Gln Tyr Asn Lys
 1 5

<210> 74
 <211> 10
 <212> PRT
 <213> Human papilloma virus

<400> 74
 Phe Gln Asp Pro Gln Glu Arg Pro Arg Lys
 1 5 10

<210> 75
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 75
 Ile Ser Glu Tyr Arg His Tyr Cys Tyr Ser
 1 5 10

<210> 76
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 76
 Lys Ile Ser Glu Tyr Arg His Tyr Cys Tyr
 1 5 10

<210> 77
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 77
 Gly Thr Thr Leu Glu Gln Gln Tyr Asn Lys
 1 5 10

<210> 78
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 78
 Lys Ile Ser Glu Tyr Arg His Tyr Cys
 1 5

<210> 79
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 79
 Tyr Cys Tyr Ser Ile Tyr Gly Thr Thr Leu
 1 5 10

<210> 80
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 80
Ser Glu Tyr Arg His Tyr Cys Tyr Ser Leu
1 5 10

<210> 81
<211> 9
<212> PRT
<213> Human Papilloma virus

<400> 81
Ala Met Phe Gln Asp Pro Gln Glu Arg
1 5

<210> 82
<211> 9
<212> PRT
<213> Human Papilloma virus

<400> 82
Leu Leu Arg Arg Glu Val Tyr Asp Phe
1 5

<210> 83
<211> 9
<212> PRT
<213> Human Papilloma virus

<400> 83
Ile Val Tyr Arg Asp Gly Asn Pro Tyr
1 5

<210> 84
<211> 9
<212> PRT
<213> Human Papilloma virus

<400> 84
Val Tyr Asp Phe Ala Phe Arg Asp Leu
1 5

<210> 85
<211> 9
<212> PRT
<213> Human Papilloma virus

<400> 85
Cys Tyr Ser Leu Tyr Gly Thr Thr Leu
1 5

<210> 86
<211> 9
<212> PRT
<213> Human Papilloma virus

<400> 86
Glu Tyr Arg His Tyr Cys Tyr Ser Leu
1 5

<210> 87
<211> 9
<212> PRT
<213> Human Papilloma virus

<400> 87
 Asp Pro Gln Glu Arg Pro Arg Lys Leu
 1 5

<210> 88
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 88
 His Tyr Cys Tyr Ser Leu Tyr Gly Thr
 1 5

<210> 89
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 89
 Asp Phe Ala Phe Arg Asp Leu Cys Ile
 1 5

<210> 90
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 90
 Leu Tyr Gly Thr Thr Leu Glu Gln Gln Tyr
 1 5 10

<210> 91
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 91
 His Tyr Cys Tyr Ser Leu Tyr Gly Thr Thr
 1 5 10

<210> 92
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 92
 Glu Val Tyr Asp Phe Ala Phe Arg Asp Leu
 1 5 10

<210> 93
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 93
 Glu Tyr Arg His Tyr Cys Tyr Ser Leu Tyr
 1 5 10

<210> 94
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 94
 Val Tyr Asp Phe Ala Phe Arg Asp Leu Cys
 1 5 10

<210> 95
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 95
 Gln Ala Glu Pro Asp Arg Ala His Tyr
 1 5

<210> 96
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 96
 Ile Val Cys Pro Ile Cys Ser Gln Lys
 1 5

<210> 97
 <211> 8
 <212> PRT
 <213> Human Papilloma virus

<400> 97
 Gln Pro Glu Thr Thr Asp Leu Tyr
 1 5

<210> 98
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 98
 Gln Ala Glu Pro Asp Arg Ala His Tyr Asn
 1 5 10

<210> 99
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 99
 Asp Leu Gln Pro Glu Thr Thr Asp Leu Tyr
 1 5 10

<210> 100
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 100
 Leu Met Gly Thr Leu Gly Ile Val Cys
 1 5

<210> 101
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 101
 Met Leu Asp Leu Gln Pro Glu Thr Thr
 1 5

<210> 102
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 102
 Thr Leu Gly Ile Val Cys Pro Ile Cys
 1 5

<210> 103
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 103
 Asp Leu Gln Pro Glu Thr Thr Asp Leu
 1 5

<210> 104
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 104
 Gly Thr Leu Gly Ile Val Cys Pro Ile
 1 5

<210> 105
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 105
 Tyr Met Leu Asp Leu Gln Pro Glu Thr Thr
 1 5 10

<210> 106
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 106
 Leu Gln Pro Glu Thr Thr Asp Leu Tyr
 1 5

<210> 107
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 107
 Leu Leu Met Gly Thr Leu Gly Ile Val Cys
 1 5 10

<210> 108
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 108
 Thr Pro Thr Leu His Glu Tyr Met Leu
 1 5

<210> 109
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 109
 Arg Ala His Tyr Asn Ile Val Thr Phe
 1 5

<210> 110
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 110
 Glu Pro Asp Arg Ala His Tyr Asn Ile
 1 5

<210> 111
 <211> 4
 <212> PRT
 <213> Homo sapiens

<400> 111
 Lys Asp Glu Leu
 1

<210> 112
 <211> 5
 <212> PRT
 <213> Homo sapiens

<400> 112
 Lys Phe Glu Arg Gln
 1 5

<210> 113
 <211> 5
 <212> PRT
 <213> Homo sapiens

<400> 113
 Gln Arg Glu Phe Lys
 1 5

<210> 114
 <211> 17
 <212> PRT
 <213> Homo sapiens

<400> 114
 Ala Val Lys Arg Pro Ala Ala Thr Lys Lys Ala Gly Gln Ala Lys Lys
 1 5 10 15
 Lys

<210> 115
 <211> 17
 <212> PRT
 <213> Homo sapiens

<400> 115
 Arg Pro Ala Ala Thr Lys Lys Ala Gly Gln Ala Lys Lys Lys Lys Leu
 1 5 10 15
 Asp

<210> 116
 <211> 19
 <212> PRT
 <213> Homo sapiens

<400> 116
 Ala Val Lys Arg Pro Ala Ala Thr Lys Lys Ala Gly Gln Ala Lys Lys
 1 5 10 15
 Lys Leu Asp

<210> 117
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 117
 Tyr Leu Glu Pro Ala Ile Ala Lys Tyr
 1 5

<210> 118
 <211> 10
 <212> PRT
 <213> Homo sapiens

<400> 118
 Phe Leu Pro Ser Asp Tyr Phe Pro Ser Val
 1 5 10

<210> 119
 <211> 10
 <212> PRT
 <213> Homo sapiens

<400> 119
 Lys Val Phe Pro Tyr Ala Leu Ile Asn Lys
 1 5 10

<210> 120
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 120
 Ala Val Asp Leu Tyr His Phe Leu Lys
 1 5

<210> 121
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 121
Ala Tyr Ile Asp Asn Tyr Asn Lys Phe
1 5

<210> 122
<211> 9
<212> PRT
<213> Human Papilloma virus

<400> 122
His Thr Met Leu Cys Met Cys Cys Lys
1 5

<210> 123
<211> 9
<212> PRT
<213> Human Papilloma virus

<400> 123
Gln Leu Phe Leu Asn Thr Leu Ser Phe
1 5

<210> 124
<211> 9
<212> PRT
<213> Human Papilloma virus

<400> 124
Lys Leu Pro Asp Leu Cys Thr Glu Leu
1 5

<210> 125
<211> 10
<212> PRT
<213> Human Papilloma virus

<400> 125
Gly Leu Tyr Asn Leu Leu Ile Arg Cys Leu
1 5 10

<210> 126
<211> 117
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial fusion sequence

<400> 126
Ala Met Phe Gln Asp Pro Gln Glu Arg Pro Arg Lys Leu Pro Gln Leu
1 5 10 15
Cys Thr Glu Leu Leu Leu Arg Arg Glu Val Tyr Asp Phe Ala Phe Arg
20 25 30
Asp Leu Cys Ile Val Tyr Arg Asp Gly Asn Pro Tyr Lys Ile Ser Glu
35 40 45
Tyr Arg His Tyr Cys Tyr Ser Leu Tyr Gly Thr Thr Leu Glu Gln Gln
50 55 60
Tyr Asn Lys Thr Leu His Glu Tyr Met Leu Asp Leu Gln Pro Glu Thr
65 70 75 80
Thr Asp Leu Tyr Ser Tyr Gln Ala Glu Pro Asp Arg Ala His Tyr Asn
85 90 95

Ile Val Thr Phe Leu Leu Met Gly Thr Leu Gly Ile Val Cys Pro Ile
 100 105 110
 Cys Ser Gln Lys Pro
 115

<210> 127
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 127
 Leu Thr Glu Val Phe Glu Phe Ala Phe Lys
 1 5 10

<210> 128
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 128
 Gly Leu Tyr Asn Leu Leu Ile Arg Cys
 1 5

<210> 129
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 129
 Ser Leu Gln Asp Ile Glu Ile Thr Cys
 1 5

<210> 130
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 130
 Ser Leu Gln Asp Ile Glu Ile Thr Cys Val
 1 5 10

<210> 131
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 131
 Leu Gln Asp Ile Glu Ile Thr Cys Val
 1 5

<210> 132
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 132
 Lys Thr Val Leu Glu Leu Thr Glu Val
 1 5

<210> 133
 <211> 9

<212> PRT
 <213> Human Papilloma virus

<400> 133
 Glu Leu Thr Glu Val Phe Glu Phe Ala
 1 5

<210> 134
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 134
 Lys Leu Thr Asn Thr Gly Leu Tyr Asn Leu
 1 5 10

<210> 135
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 135
 Leu Thr Asn Thr Gly Leu Tyr Asn Leu
 1 5

<210> 136
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 136
 Val Leu Glu Leu Thr Glu Val Phe Glu Phe
 1 5 10

<210> 137
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 137
 Ser Val Tyr Gly Asp Thr Leu Glu Lys
 1 5

<210> 138
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 138
 Leu Leu Ile Arg Cys Leu Arg Cys Gln Lys
 1 5 10

<210> 139
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 139
 Cys Val Tyr Cys Lys Thr Val Leu Glu Leu
 1 5 10

<210> 140
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

 <400> 140
 Val Tyr Cys Lys Thr Val Leu Glu Leu
 1 5

 <210> 141
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

 <400> 141
 Val Tyr Gly Asp Thr Leu Glu Lys Leu
 1 5

 <210> 142
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

 <400> 142
 Leu Thr Asn Thr Gly Leu Tyr Asn Leu Leu
 1 5 10

 <210> 143
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

 <400> 143
 His Leu Glu Pro Gln Asn Glu Ile Pro Val
 1 5 10

 <210> 144
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

 <400> 144
 Thr Leu Gln Asp Ile Val Leu His Leu
 1 5

 <210> 145
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

 <400> 145
 Ala Thr Leu Gln Asp Ile Val Leu His Leu
 1 5 10

 <210> 146
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

 <400> 146
 Gln Leu Phe Leu Asn Thr Leu Ser Phe Val
 1 5 10

<210> 147
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 147
 Met Leu Cys Met Cys Cys Lys Cys Glu Ala
 1 5 10

<210> 148
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 148
 Cys Met Cys Cys Lys Cys Glu Ala Arg Ile
 1 5 10

<210> 149
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 149
 Phe Gln Gln Leu Phe Leu Asn Thr Leu
 1 5

<210> 150
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 150
 Thr Leu Ser Phe Val Cys Pro Trp Cys
 1 5

<210> 151
 <211> 10
 <212> PRT
 <213> Human Papilloma virus

<400> 151
 Ala Phe Gln Gln Leu Phe Leu Asn Thr Leu
 1 5 10

<210> 152
 <211> 42
 <212> PRT
 <213> Human Papilloma virus

<400> 152
 Arg Arg Pro Tyr Lys Leu Pro Asp Leu Cys Thr Glu Leu Asn Thr Ser
 1 5 10 15
 Leu Gln Asp Ile Glu Ile Thr Cys Val Tyr Cys Lys Thr Val Leu Glu
 20 25 30
 Leu Thr Glu Val Phe Glu Phe Ala Phe Lys
 35 40

<210> 153
 <211> 27
 <212> PRT
 <213> Human Papilloma virus

<400> 153

Ser Val Tyr Gly Asp Thr Leu Glu Lys Leu Thr Asn Thr Gly Leu Tyr
 1 5 10 15
 Asn Leu Leu Ile Arg Cys Leu Arg Cys Gln Lys
 20 25

<210> 154

<211> 19

<212> PRT

<213> Human Papilloma virus

<400> 154

Lys Ala Thr Leu Gln Asp Ile Val Leu His Leu Glu Pro Gln Asn Glu
 1 5 10 15
 Ile Pro Val

<210> 155

<211> 14

<212> PRT

<213> Human Papilloma virus

<400> 155

His Thr Met Leu Cys Met Cys Cys Lys Cys Glu Ala Arg Ile
 1 5 10

<210> 156

<211> 17

<212> PRT

<213> Human Papilloma virus

<400> 156

Ala Phe Gln Gln Leu Phe Leu Asn Thr Leu Ser Phe Val Cys Pro Trp
 1 5 10 15
 Cys

<210> 157

<211> 236

<212> PRT

<213> Artificial Sequence

<220>

<223> Artificial fusion sequence

<400> 157

Ala Met Phe Gln Asp Pro Gln Glu Arg Pro Arg Lys Leu Pro Gln Leu
 1 5 10 15
 Cys Thr Glu Leu Leu Arg Arg Glu Val Tyr Asp Phe Ala Phe Arg
 20 25 30
 Asp Leu Cys Ile Val Tyr Arg Asp Gly Asn Pro Tyr Lys Ile Ser Glu
 35 40 45
 Tyr Arg His Tyr Cys Tyr Ser Leu Tyr Gly Thr Thr Leu Glu Gln Gln
 50 55 60
 Tyr Asn Lys Thr Leu His Glu Tyr Met Leu Asp Leu Gln Pro Glu Thr
 65 70 75 80
 Thr Asp Leu Tyr Ser Tyr Gln Ala Glu Pro Asp Arg Ala His Tyr Asn
 85 90 95
 Ile Val Thr Phe Leu Leu Met Gly Thr Leu Gly Ile Val Cys Pro Ile
 100 105 110
 Cys Ser Gln Lys Pro Arg Arg Pro Tyr Lys Leu Pro Asp Leu Cys Thr
 115 120 125

Glu	Leu	Asn	Thr	Ser	Leu	Gln	Asp	Ile	Glu	Ile	Thr	Cys	Val	Tyr	Cys
130						135					140				
Lys	Thr	Val	Leu	Glu	Leu	Thr	Glu	Val	Phe	Glu	Phe	Ala	Phe	Lys	Ser
145					150					155					160
Val	Tyr	Gly	Asp	Thr	Leu	Glu	Lys	Leu	Thr	Asn	Thr	Gly	Leu	Tyr	Asn
				165					170					175	
Leu	Leu	Ile	Arg	Cys	Leu	Arg	Cys	Gln	Lys	Lys	Ala	Thr	Leu	Gln	Asp
			180					185					190		
Ile	Val	Leu	His	Leu	Glu	Pro	Gln	Asn	Glu	Ile	Pro	Val	His	Thr	Met
		195					200					205			
Leu	Cys	Met	Cys	Cys	Lys	Cys	Glu	Ala	Arg	Ile	Ala	Phe	Gln	Gln	Leu
	210					215					220				
Phe	Leu	Asn	Thr	Leu	Ser	Phe	Val	Cys	Pro	Trp	Cys				
225					230					235					

<210> 158

<211> 237

<212> PRT

<213> Artificial Sequence

<220>

<223> Artificial fusion sequence

<400> 158

Met	Ala	Met	Phe	Gln	Asp	Pro	Gln	Glu	Arg	Pro	Arg	Lys	Leu	Pro	Gln
1				5					10					15	
Leu	Cys	Thr	Glu	Leu	Leu	Leu	Arg	Arg	Glu	Val	Tyr	Asp	Phe	Ala	Phe
			20					25					30		
Arg	Asp	Leu	Cys	Ile	Val	Tyr	Arg	Asp	Gly	Asn	Pro	Tyr	Lys	Ile	Ser
		35					40					45			
Glu	Tyr	Arg	His	Tyr	Cys	Tyr	Ser	Leu	Tyr	Gly	Thr	Thr	Leu	Glu	Gln
	50					55					60				
Gln	Tyr	Asn	Lys	Thr	Leu	His	Glu	Tyr	Met	Leu	Asp	Leu	Gln	Pro	Glu
	65				70					75				80	
Thr	Thr	Asp	Leu	Tyr	Ser	Tyr	Gln	Ala	Glu	Pro	Asp	Arg	Ala	His	Tyr
			85						90					95	
Asn	Ile	Val	Thr	Phe	Leu	Leu	Met	Gly	Thr	Leu	Gly	Ile	Val	Cys	Pro
		100						105					110		
Ile	Cys	Ser	Gln	Lys	Pro	Arg	Arg	Pro	Tyr	Lys	Leu	Pro	Asp	Leu	Cys
		115				120						125			
Thr	Glu	Leu	Asn	Thr	Ser	Leu	Gln	Asp	Ile	Glu	Ile	Thr	Cys	Val	Tyr
	130					135					140				
Cys	Lys	Thr	Val	Leu	Glu	Leu	Thr	Glu	Val	Phe	Glu	Phe	Ala	Phe	Lys
	145				150					155					160
Ser	Val	Tyr	Gly	Asp	Thr	Leu	Glu	Lys	Leu	Thr	Asn	Thr	Gly	Leu	Tyr
			165					170						175	
Asn	Leu	Leu	Ile	Arg	Cys	Leu	Arg	Cys	Gln	Lys	Lys	Ala	Thr	Leu	Gln
			180					185					190		
Asp	Ile	Val	Leu	His	Leu	Glu	Pro	Gln	Asn	Glu	Ile	Pro	Val	His	Thr
		195					200					205			
Met	Leu	Cys	Met	Cys	Cys	Lys	Cys	Glu	Ala	Arg	Ile	Ala	Phe	Gln	Gln
	210					215					220				
Leu	Phe	Leu	Asn	Thr	Leu	Ser	Phe	Val	Cys	Pro	Trp	Cys			
225					230					235					

<210> 159

<211> 119

<212> PRT

<213> Artificial Sequence

<220>

<223> Artificial fusion sequence

<400> 159

```

Arg Arg Pro Tyr Lys Leu Pro Asp Leu Cys Thr Glu Leu Asn Thr Ser
 1      5      10      15
Leu Gln Asp Ile Glu Ile Thr Cys Val Tyr Cys Lys Thr Val Leu Glu
      20      25      30
Leu Thr Glu Val Phe Glu Phe Ala Phe Lys Ser Val Tyr Gly Asp Thr
      35      40      45
Leu Glu Lys Leu Thr Asn Thr Gly Leu Tyr Asn Leu Leu Ile Arg Cys
      50      55      60
Leu Arg Cys Gln Lys Lys Ala Thr Leu Gln Asp Ile Val Leu His Leu
      65      70      75      80
Glu Pro Gln Asn Glu Ile Pro Val His Thr Met Leu Cys Met Cys Cys
      85      90      95
Lys Cys Glu Ala Arg Ile Ala Phe Gln Gln Leu Phe Leu Asn Thr Leu
      100      105      110
Ser Phe Val Cys Pro Trp Cys
      115

```

<210> 160

<211> 261

<212> PRT

<213> Artificial Sequence

<220>

<223> Artificial fusion sequence

<400> 160

```

Met Ala Ile Ser Gly Val Pro Val Leu Gly Phe Phe Ile Ile Ala Val
 1      5      10      15
Leu Met Ser Ala Gln Glu Ser Trp Ala Met Phe Gln Asp Pro Gln
      20      25      30
Glu Arg Pro Arg Lys Leu Pro Gln Leu Cys Thr Glu Leu Leu Leu Arg
      35      40      45
Arg Glu Val Tyr Asp Phe Ala Phe Arg Asp Leu Cys Ile Val Tyr Arg
      50      55      60
Asp Gly Asn Pro Tyr Lys Ile Ser Glu Tyr Arg His Tyr Cys Tyr Ser
      65      70      75      80
Leu Tyr Gly Thr Thr Leu Glu Gln Gln Tyr Asn Lys Thr Leu His Glu
      85      90      95
Tyr Met Leu Asp Leu Gln Pro Glu Thr Thr Asp Leu Tyr Ser Tyr Gln
      100      105      110
Ala Glu Pro Asp Arg Ala His Tyr Asn Ile Val Thr Phe Leu Leu Met
      115      120      125
Gly Thr Leu Gly Ile Val Cys Pro Ile Cys Ser Gln Lys Pro Arg Arg
      130      135      140
Pro Tyr Lys Leu Pro Asp Leu Cys Thr Glu Leu Asn Thr Ser Leu Gln
      145      150      155      160
Asp Ile Glu Ile Thr Cys Val Tyr Cys Lys Thr Val Leu Glu Leu Thr
      165      170      175
Glu Val Phe Glu Phe Ala Phe Lys Ser Val Tyr Gly Asp Thr Leu Glu
      180      185      190
Lys Leu Thr Asn Thr Gly Leu Tyr Asn Leu Leu Ile Arg Cys Leu Arg
      195      200      205
Cys Gln Lys Lys Ala Thr Leu Gln Asp Ile Val Leu His Leu Glu Pro
      210      215      220
Gln Asn Glu Ile Pro Val His Thr Met Leu Cys Met Cys Cys Lys Cys
      225      230      235      240
Glu Ala Arg Ile Ala Phe Gln Gln Leu Phe Leu Asn Thr Leu Ser Phe
      245      250      255
Val Cys Pro Trp Cys
      260

```

<210> 161
 <211> 340
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Artificial fusion sequence

<400> 161
 atggctatgt tccaggaccc acaggaacgc ccacgcaaac tgccacagct gtgcaccgag 60
 ctctctctgc gccgcgaggt gtatgacttc gcttttcgcg acctgtgcat cgtctaccgc 120
 gatggcaacc catataagat ctccgagtac cgccactact gctattccct gtatggcacc 180
 accctggagc agcagtacaa caagaccctg cagcagtaga tgctggatct gcagccagag 240
 accaccgata tgtactccta tcaggctgag ccagatcgcg ctactataa catcgtgacc 300
 ttctgtctga tgggcaccct gggcatcggt tgcccaatct 340

<210> 162
 <211> 786
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Artificial fusion sequence

<400> 162
 atggctatct ccggcgtgcc agtgctgggc ttcttcatca tcgctgtgct gatgtccgct 60
 caggagtccct gggctgctat gttccaggac ccacaggaac gcccacgcaa actgccacag 120
 ctgtgcaccg agctcctcct gccgcgogag gtgtatgact tcgcttttcg cgacctgtgc 180
 atcgtctacc gcgatggcaa cccatataag atctccgagt accgccacta ctgctattcc 240
 ctgtatggca ccaccctgga gcagcagtag aacaagaccc tgcacgagta catgctggat 300
 ctgcagccag agaccaccga tctgtactcc tatcaggctg agccagatcg cgctcactat 360
 aacatcgtga ccttcctgct gatggggcacc ctggggcatcg tgtgcccatt ctgctcccag 420
 aagccccggc gaccctacaa gctacctgat ctgtgcacgg aactgaacac ttacttgcaa 480
 gacatagaaa taacctgtgt atattgcaag acagtattgg aacttacaga ggtatttgaa 540
 tttgcattta aatctgtgta tggagacaca ttggaaaaac taactaacac tgggttatac 600
 aatttattaa taaggtgcct gcggtgccag aaaaaggcaa cattgcaaga cattgtattg 660
 catttagagc cccaaaatga aattccggtt cacacaatgt tgtgtatgtg ttgtaagtgt 720
 gaagccagaa ttgcattcca gcagctgttt ctgaacaccc tgtcctttgt gtgtccgtgg 780
 tgtaa 786

<210> 163
 <211> 9
 <212> PRT
 <213> Human Papilloma virus

<400> 163
 Glu Val Tyr Asp Phe Ala Phe Arg Asp
 1 5